

# ***AutoPayItem User's Manual***

*API version 3.0  
May 2002*

Prepared for  
**Idaho Transportation Department**

by



National Institute for Advanced Transportation Technology  
University of Idaho, Moscow, ID

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## INTRODUCTION

*AutoPayItem (API)* is a CADD tool for *MicroStation* that creates and manages pay item information for design plans. The program performs four major functions:

- Maintains pay item information for a set of design plans in a central database, so you only need to enter the data one time.
- Automates the creation of pay item graphics, including capsules, on plan views and summaries.
- Provides automated summaries for design plans and for projects.
- Creates an ASCII text file of project pay items for import into other bid item estimating and historical documentation applications.

*API* performs these functions by connecting *MicroStation* to a *Microsoft Access* database. This allows you to enjoy some of the most useful functions of a database, but requires almost no knowledge of database software itself.

*API* increases your productivity in several ways: it speeds the process of adding pay items to a roadway design and creating capsule graphics, it reduces errors in pay item calculations, and it greatly reduces the amount of time spent reviewing sidebar and roadway summaries.

This manual assumes that you are familiar with *MicroStation SE*, and that *API* has been successfully installed on your system by your System Administrator.

## HOW API WORKS

*API* keeps a master list of all bid items. You can search for bid items by name or number, and *API* will provide you with the bid item number, name, and units.

When you use *API* to manage pay items in a *MicroStation* design, it creates and maintains an individual database for that design. As you add, delete, or modify pay items on the plan sheets, the database table is automatically updated. Then, when you use *API* to create one of the automated summaries, the current information is arranged and displayed in the proper summary format as a *MicroStation* graphic.

*API* also provides the pay item graphic for your design file. This graphic appears as a capsule with the pay item number inside, and is linked directly to the master pay item database.

## REQUIREMENTS

The following are the basic requirements for using *API*:

- *MicroStation SE* or *MicroStation J*
- *API* Version 3.0
- *Microsoft ACCESS 2000* or greater.
- System database drivers – *Windows NT* Service Pack 4, i.e. Version 4.00.3711.08 or later (Contact your System Administrator)
- Project Database (XXXX*API*.mdb, which is a copy of *APITemplate.mdb*)
- ODBC Data Source system settings to connect to the project database
- Previously-created *MicroStation* files of applicable plan sheets
- Individual Pay Item-specific information

## LIMITATIONS

**DO NOT** copy any *MicroStation* file, by any means, that has been associated with *API*. This will result in deleted and/or corrupt pay items in both the original and the copied files.

**Create** all *MicroStation* files and attach any reference files as needed while *API* is NOT loaded and running. This will help avoid any potential corruption of the *MicroStation* files or the *API* database.

**You must** create any *MicroStation* files that will contain pay items prior to the assignment of an *API* sheet number. Once an *API* sheet number has been assigned to a *MicroStation* file, that number stays with that file, regardless of whether Pay Items have been placed or not.

**DO NOT** use *MicroStation* to create the Pay Item graphics. Use *API*'s "Create Pay Items" function.

**DO NOT** use the *MicroStation* commands of UNDO & REDO to delete or undelete the pay item capsules created by *API*. These commands do not re-establish the database links that *API* requires. If you delete a pay item and it must be recreated, you must do so within *API*.

**If you delete** a *MicroStation* design file that has had pay items created by *API*, be sure you also delete the corresponding sheet in *API Sheet Attributes*. If you do not do this, two problems will arise: 1) the pay items from the deleted sheet will appear in the Roadway Summary, and 2) you will not be able to assign that sheet number to another design file, effectively preventing you from recreating the same plan sheet.

# BASIC ITD WORKFLOW

## Basic Plan/Plan Profile & Roadway Summary Sheets

1. Create all applicable plan or plan/profile sheets, per the ITD Project Workflow for CADD Manual.
2. Attach the ITD Metric Dimensioning style library.  
Select the appropriate scale.  
Save settings.  
This sets the element parameters and text size for pay item capsules and the Sidebar Summary.

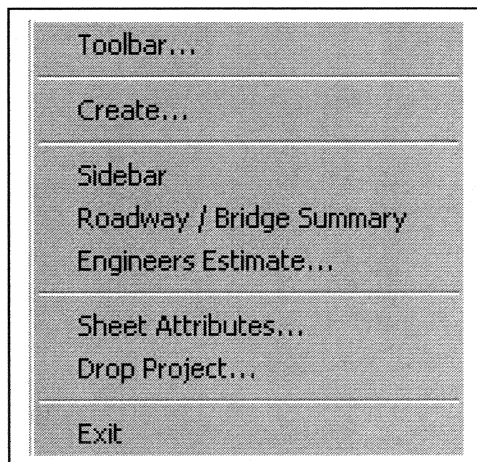
Note: If Dimensioning Text attributes are changed for other designer needs, they must be reset prior to using *API* again.

3. Develop known pay item information for all sheets, including pay item number, quantities, locations (Station information), and any specific notes required.  
*This should be done on paper copies of the plan sheets.*
4. If possible, determine if all pay items will fit on the given plan sheet. If not, determine how to best accommodate the additional pay items, by relocating them on the same plan sheet or creating new plan sheets to divide all required pay items between two or more plan sheets.
5. Open an applicable *MicroStation* file.
6. Load *API*.
7. Create all Pay Items with *API*.
8. Use *MicroStation* commands of MOVE ELEMENT, MODIFY ELEMENT, INSERT VERTEX, and DELETE VERTEX to move and modify the pay item capsules and leaders, as needed.

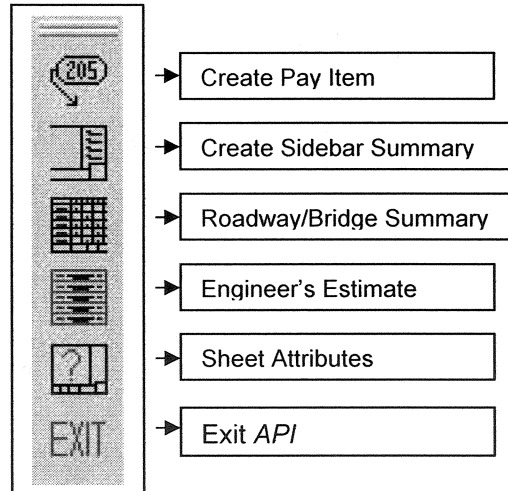
Do NOT use the UNDO or REDO commands of *MicroStation*.

9. Create Sidebar, Roadway and Bridge Summaries with *API*, as needed.
10. Create Engineer's Estimate with *API*, as needed.

## API DROP DOWN MENU AND DOCKABLE TOOLBAR MENU COMMANDS



Drop Down Menu



Dockable Toolbar

### TOOLBAR

- Opens the *API* dockable toolbar for easy access to all *API* functions

### CREATE

- Add, modify or delete pay items in your project

### SIDEBAR

- Create a sidebar summary on your design

### ROADWAY/BRIDGE SUMMARY

- Create a Roadway Summary or Bridge Summary for your design

### ENGINEER'S ESTIMATE

- Create an engineer's estimate ASCII file

### SHEET ATTRIBUTES

- Manage sheets in your project

### DROP PROJECT

- Delete all information about the project from the database

### EXIT

- Exit *API*

# GETTING STARTED WITH API

## Key Points for Starting a New Project

- *API* requires that the first 4 characters of a design file name be numeric. Therefore, it will work with a design file named '3654pl01.dgn' but not with 'myfile.dgn'. In addition, this four-digit number must be unique to a specific project's design files, *i.e. project Key No.*
- The master bid item list is contained in the *API* database template file. To make sure you have the most current master bid item list, obtain a copy of the *API* template database from your system administrator each time you start a new project.
- You *must* create an ODBC data source in order to run *API*.
- You *must* complete the ODBC configuration steps for each new project.
- You will only need to go through the ODBC configuration steps once for each project *on each workstation that is using API for a given project.*
- When you open a design file with a name containing the same 4-digit project number as the 4-digit number in the ODBC data source name, the correct database will be opened when *API* is loaded.
- *It is best to have only one user at a time working in API on a given project.*

## File Issues

*API* is designed to work on projects composed of multiple design files. The design files belonging to a project must all share a four-digit project key number at the beginning of their filenames, such as 3500pl01.dgn, 3500pl02.dgn, 3500rsum.dgn, etc.

xxxxrsum.dgn, and xxxxbsum.dgn are the only files to which *API* will not assign sheet numbers, and they are the only files on which the Roadway Summary and the Bridge Summary can be displayed.

*API* will keep track of your data in such a way that the sidebar summary will contain only those pay items found in a particular design file. The Roadway Summary will contain all pay items found in all design files sharing the same four-digit key number, along with the pay items specifically entered as Roadway Summary items that are not itemized in individual files.

The Bridge Summary will contain only the pay items entered specifically as Bridge Summary items.

The Engineer's Estimate will contain all pay items from files sharing the same four-digit key number and directory, pay items specifically entered as Roadway Summary items, and pay items specifically entered as Bridge Items.

## Setting Up the *API* Database

For each new project, you will need to obtain a copy of the most current *API* database template file. Your office should have a copy of this file, accessible on your computer network. Copy this file to the project directory, per ITD CADD Standards, and rename it with the project key number, "xxxx*API*.mdb." This is your project-specific database file.

In order for *API* to connect to the project database, you will need to create an ODBC data source.

### *Windows NT*

In *Windows NT*, open the control panel by selecting Start -> Settings -> Control Panel. In the control panel window double-click the ODBC icon. This will open the ODBC control panel (Figure 1).

### *Windows 2000*

In *Windows 2000*, access the ODBC control panel by selecting Start -> Settings -> Control Panel. In the Control Panel double-click Administrative Tools -> Data Sources (ODBC). This will open the ODBC control panel.

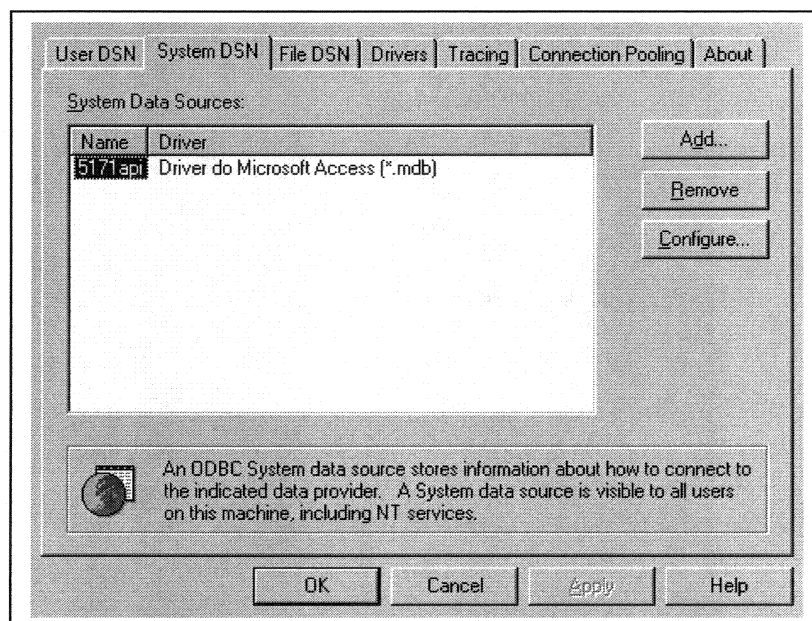
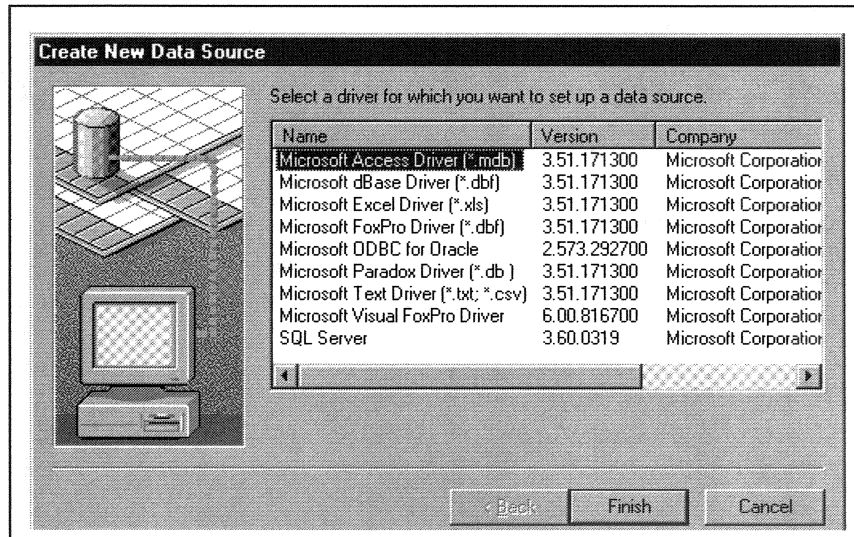


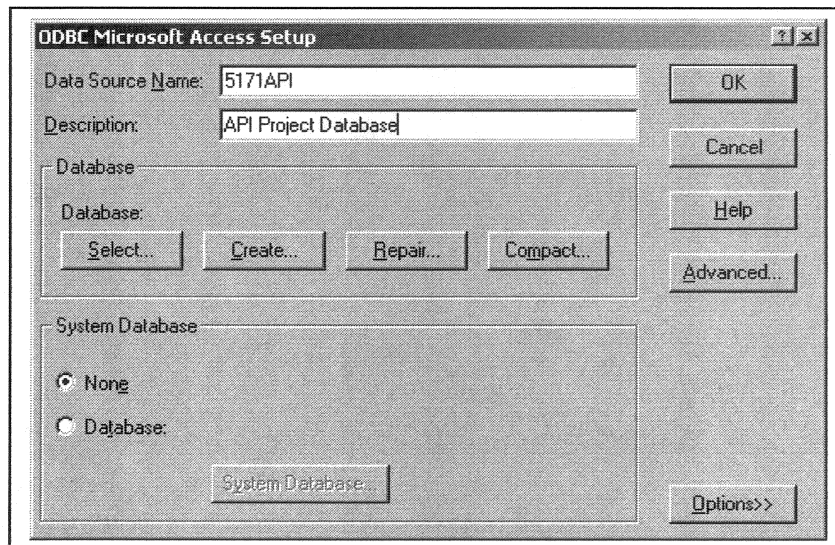
Figure 1. ODBC Control Panel

Select the “System DSN” tab on the ODBC control panel dialog box. Then click the “Add” button in order to configure your new data source. This will open the database driver selection dialog box (Figure 2).



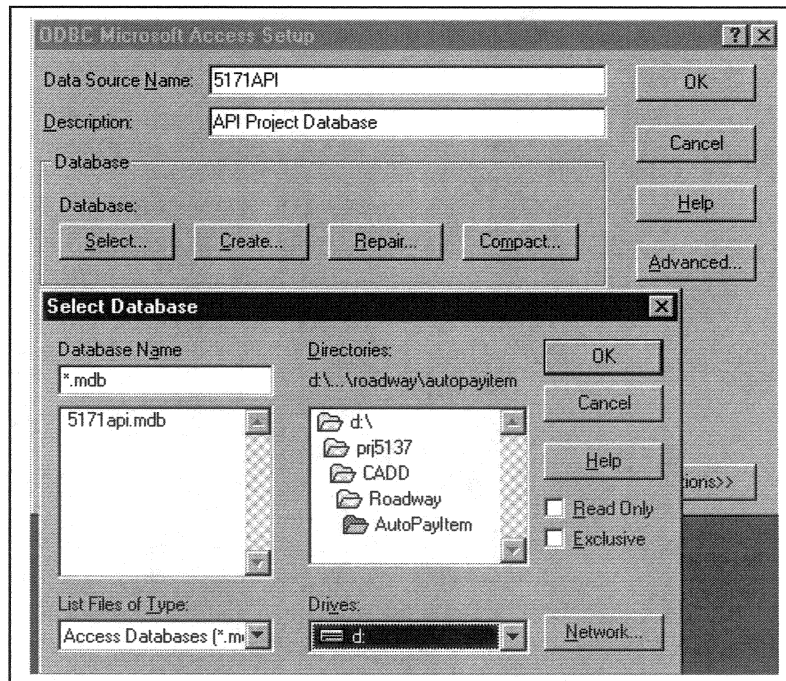
**Figure 2. ODBC Database Driver Selection screen**

Select the *Microsoft Access Driver (\*.mdb)*, as shown in Figure 2, and click the “Finish” button. You will then be able to set up your ODBC data source with the ODBC *Microsoft Access Setup* dialog box (Figure 3).



**Figure 3. ODBC MS Access Setup dialog box**

In the setup dialog box, enter a “Data Source Name.” The data source name must follow *API* naming conventions: *xxxxAPI*, where *xxxx* is the four-digit project number for which you want to create pay items. The Description field is optional. In the Database section of the dialog box, click the “Select” button, to select the project-specific database file you created earlier for this project (Figure 4).



**Figure 4. Select Database dialog box**

Once your data source is named and you have selected a database, click the “OK” button. The ODBC configuration for this project is now completed.



## Loading API

Once you have created an ODBC data source, you can load *API*. Do this from within any *MicroStation SE* design file. Open the design file and select “Utilities,” then “MDL Applications.” In the MDL Applications dialog box (Figure 5), select *API3*, and click the “Load” button.

**Shortcut:** in the *MicroStation* Key-In Field, type “mdl load *API3*” and press “Enter.” Use “mdl load *API3*” as the string dialog for a function key shortcut.

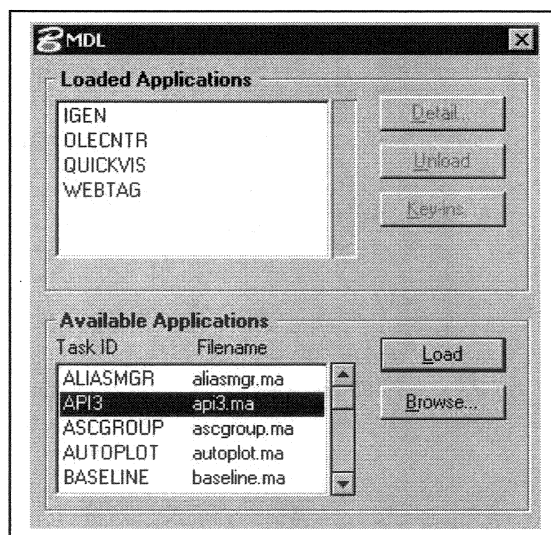


Figure 5. MDL Applications dialog box

## Choosing a Sheet Number

The first time that you load *API* in a new or existing *MicroStation* sheet, the Sheet Number dialog box will appear and you will be prompted to enter sheet number, scale, and station information (Figure 6). The sheet number corresponds to the plan sheet number and the station information corresponds to the Station field on the Roadway Summary “Station – Station” line. Enter the appropriate sheet scale also.

You must choose a sheet number for the design file, even if it is only a temporary number. When you have entered the sheet number, scale, and optional station information, click the "OK" button. You will need to enter this information every time you load *API* in a sheet for the first time.

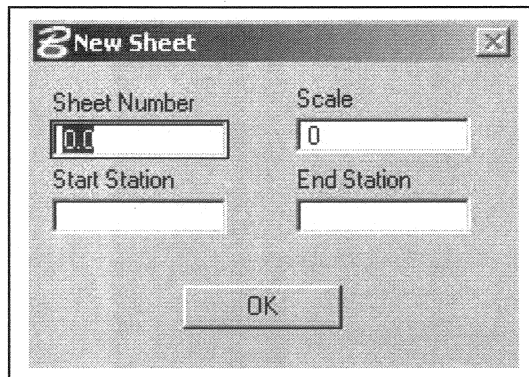


Figure 6. New Sheet dialog box

Once you click "OK," the *API* menu button will appear on your main *MicroStation* menu bar, and you can begin to add pay items to this design file. The *API* Menu button will appear as the last item on the *MicroStation* menu bar, next to the Help button (Figure 7).

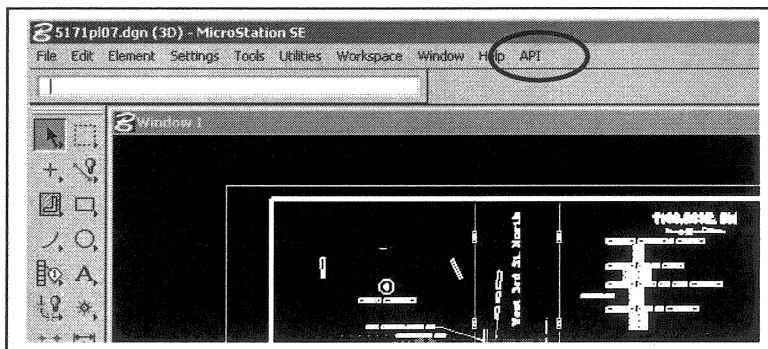
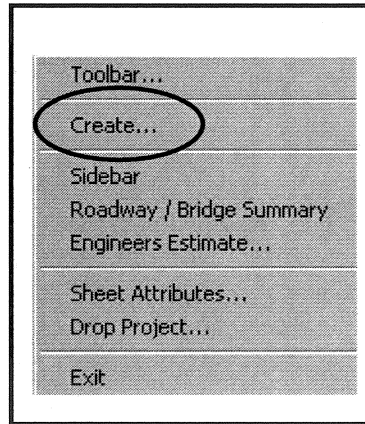


Figure 7. API Menu button.

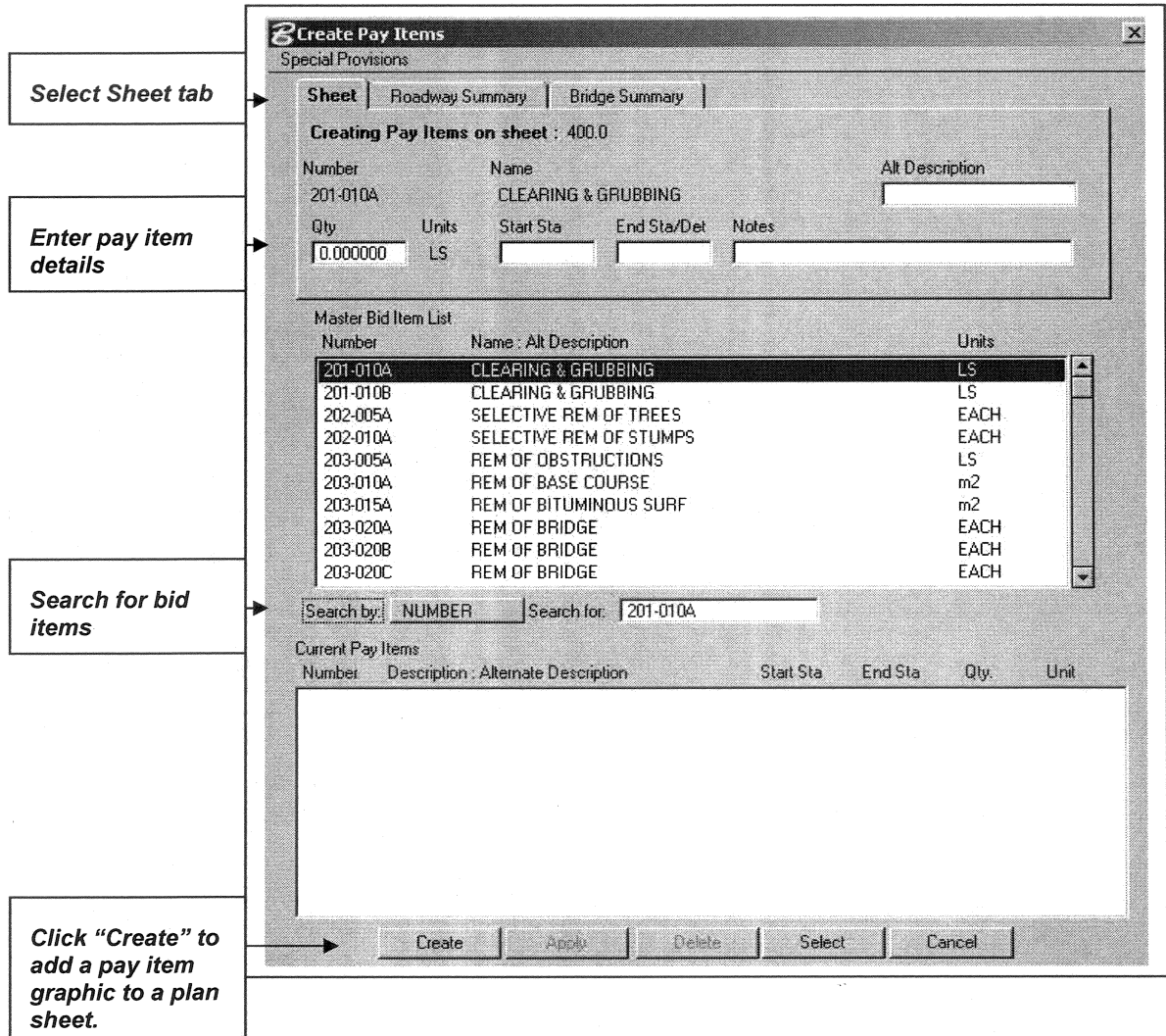
## WORKING WITH PAY ITEMS AND BID ITEMS

To work with plan sheet or summary sheet pay items and bid items, first click “Create” under the *API* menu (Figure 8).



**Figure 8. Main API Menu.**

This will open the Create Pay Item dialog box (Figure 9). This dialog box is used to create, modify and delete pay items and pay item graphics.



**Figure 9.** Use the Create Pay Item screen to work with plan sheet and summary pay items.

## WORKING WITH PAY ITEMS

### Plan Sheet Pay Items

#### *Step One: Select the Sheet*

To add pay items and graphics to your plan sheet, first select the **Sheet** tab at the upper-left corner of the screen (Figure 9).

#### *Step Two: Search for your first bid item from the master bid item list.*

The master bid item list is the upper white box in Figure 9. Bid items are listed in numerical order, but you can also search the list for a specific item.

You can search through the master list on two criteria—Name or Number. Simply choose the criteria you want from the “Search By” option box, then enter the bid item’s number or name in the “Search For” text box. The master bid item list will scroll dynamically to the bid item that most closely matches the search string you entered. You can also search through the master bid item list manually, using the scroll bar to the right of the list box. Once you have found the appropriate bid item, click to select it.

#### *Step Three: Enter pay item details*

After selecting a bid item, enter a quantity for that item (Figure 9). Enter Start Station and End Station if appropriate, and enter any Notes, if applicable. These notes will be displayed in the Sidebar Summary below the individual pay item they are associated with. An alternate description can also be entered at this time.

#### *Step Four: Create a graphic for the pay item*

Once you have entered the details for a bid item, you can create a graphic for that pay item in your plan sheet. The next section describes this step in detail.

### Creating Pay Item Graphics

**Key Point for Creating Pay Item Graphics**  
DO NOT use MicroStation to create the Pay Item graphics.  
Use API's "Create Pay Items" function.

Once you have entered details for a bid item, click the “Create” button at the bottom left of the Create Pay Items screen to create a pay item graphic on the plan sheet. The Create Pay Item screen will temporarily disappear while you place the graphic on the plan sheet (Figure 10).

### *Pay Item Graphic With Leader Line and Capsule*

Position the cursor at the location in your drawing where you want the pay item graphic to be displayed and *left-click* the mouse. The capsule will appear with the pay item number inside, but it will not be fixed on the plan sheet yet.

Then create and position the leader lines. Hold down the left mouse button to drag the leader line into position. Release and depress the left button to create each new data point.

When you are finished creating the leader line, *right-click* the mouse to set the final data point and position the capsule. The Create Pay Item dialog will immediately reappear so you can continue adding pay items.

If, before you place the capsule, you decide you want the leader to begin in a different place, reset and reposition the cursor. Repeat the above steps to create more pay items and pay item graphics.

### *Pay Item Graphic With Capsule Only*

Position the cursor on your drawing where you want the graphic to be displayed and *right-click* the mouse. Holding the right button down, drag the capsule to reposition it. Then *left-click* the mouse to set the capsule in position.

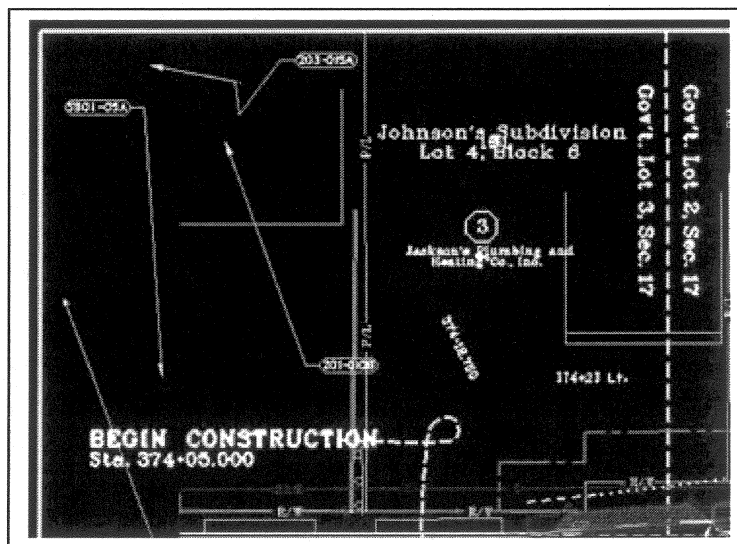


Figure 10. Sample pay item graphics.

After you place each pay item capsule on the plan sheet, the pay item will appear in the Current Pay Items box (Figure 11).

**Create Pay Items**  
Special Provisions

Sheet | Roadway Summary | Bridge Summary

Creating Pay Items on sheet : 13.0

Number:      Name:      Alt Description: \_\_\_\_\_

Qty: 0.000000      Units:      Start Sta:      End Sta/Def:      Notes: \_\_\_\_\_

Master Bid Item List

Number	Name	Alt Description	Units
201-005B	CLEARING & GRUBBING		ha
201-010A	CLEARING & GRUBBING		LS
201-010B	CLEARING & GRUBBING		LS
202-005A	SELECTIVE REM OF TREES		EACH
202-010A	SELECTIVE REM OF STUMPS		EACH
203-005A	REM OF OBSTRUCTIONS		LS
203-010A	REM OF BASE COURSE		m2
203-015A	REM OF BITUMINOUS SURF		m2
203-020A	REM OF BRIDGE		EACH
203-020B	REM OF BRIDGE		EACH

Search by: NUMBER      Search for: \_\_\_\_\_

Current Pay Items

Number	Description	Alternate Description	Start Sta	End Sta	Qty	Unit
201-010B	CLEARING & GRUBBING				7.000	LS
203-015A	REM OF BITUMINOUS SURF				80000	m2

Create      Apply      Delete      Select      Cancel

*Pay items that have been placed on the plan sheet will be displayed here.*

Figure 11. Current Pay Items box.

You can now select pay items from either list, which is sometimes faster than searching the Master Bid Item

For example, if you have two fence pay items, one on either side of the road, first select the fence pay item from the Master Bid Item list (upper white box), enter pay item details and create the pay item. Then, simply select the same pay item from the Current Pay Items (lower white box), change the pay item details as required and create another pay item.

## Roadway Summary and Bridge Summary Pay Items

To add pay items to your project that are not itemized on plan sheets you need to create them, using the **Roadway Summary** (Figure 12) screen for roadway items and the **Bridge Summary** screen for bridge items. Select the appropriate tab at the top of any Create Pay items screen.

You can search for and select roadway summary or bridge summary bid items in the same manner as described above for plan sheet bid items. Search for items by name or number (Figure 12).

After selecting the bid item, enter the quantity, an Alt. Description if desired, and click Create. The pay item will be added to the current Roadway Summary or Bridge Summary pay item list. Repeat as necessary. This list is treated by *API* like a separate sheet, but it can be accessed from any design file associated with *API*, including the xxxxrsum.dgn and xxxxbsum.dgn files.

The Current Pay Items list on the **Sheet** tab is unique to the file that *API* is currently operating in. The Current Pay Items list on the **Roadway Summary** and **Bridge Summary** tabs are common to all files within the same project.

**Create Pay Items**  
Special Provisions

Sheet | **Roadway Summary** | Bridge Summary

**Creating Pay Items for Roadway Summary**

Number:      Name:      Alt Description:

Qty:  Units:

Master Bid Item List

Number	Name : Alt Description	Units
201-010A	CLEARING & GRUBBING	LS
201-010B	CLEARING & GRUBBING	LS
202-005A	SELECTIVE REM OF TREES	EACH
202-010A	SELECTIVE REM OF STUMPS	EACH
203-005A	REM OF OBSTRUCTIONS	LS
203-010A	REM OF BASE COURSE	m2
203-015A	REM OF BITUMINOUS SURF	m2
203-020A	REM OF BRIDGE	EACH
203-020B	REM OF BRIDGE	EACH
203-020C	REM OF BRIDGE	EACH

Search by:  Search for:

Current Pay Items

Number	Description : Alternate Description	Start Sta	End Sta	Qty.	Unit

Create Apply Delete Select Cancel

**Search for Roadway or Bridge Summary bid items here.**

Figure 12. Create Pay Items for Roadway Summary screen



## Modifying Pay Items

To modify a pay item on a sheet, select it in the Current Pay Items list box (Figure 13). You can edit the quantity, start and end stations, notes and alternate description. You cannot edit the name, number or units of the pay item. If you need to edit these items, delete the item and reenter it (see next section for details). Once you've made your changes, click "Apply."

An alternate method for editing a pay item is to first click the "Select" button on the bottom of the Create Pay Items screen. Then, select the pay item graphic on the plan sheet and accept it. The item will be highlighted in the Current Pay Item list box, ready for editing.

On a Roadway or Bridge Summary, you can edit the quantity and Alt. Description of an item.

Remember, when modifying pay item details, click Apply, and when adding new pay items, click Create.

**Create Pay Items**  
Special Provisions

Sheet | Roadway Summary | Bridge Summary

Creating Pay Items on sheet : 400.0

Number	Name	Alt Description
201-010A	CLEARING & GRUBBING	

Qty	Units	Start Sta	End Sta/End	Notes
1.000000	LS			

Master Bid Item List

Number	Name : Alt Description	Units
201-005B	CLEARING & GRUBBING	ha
201-010A	CLEARING & GRUBBING	LS
201-010B	CLEARING & GRUBBING	LS
202-005A	SELECTIVE REM OF TREES	EACH
202-010A	SELECTIVE REM OF STUMPS	EACH
203-005A	REM OF OBSTRUCTIONS	LS
203-010A	REM OF BASE COURSE	m2
203-015A	REM OF BITUMINOUS SURF	m2
203-020A	REM OF BRIDGE	EACH
203-020B	REM OF BRIDGE	EACH

Search by: NUMBER Search for:

Current Pay Items

Number	Description : Alternate Description	Start Sta	End Sta	Qty	Unit
201-010A	CLEARING & GRUBBING			1.000	LS
201-010A	CLEARING & GRUBBING			1.000	LS
201-010A	CLEARING & GRUBBING			1.000	LS
203-010A	REM OF BASE COURSE			1.000	m2

Create Apply Delete Select Cancel

**Select a pay item from this list to modify it.**

**Figure 13. You can edit only the quantity, start and end stations, notes and alternate description.**

## Deleting Pay Items

To delete a pay item, select the item in the Current Pay Items list box and click the "Delete" button at the bottom of the screen. You can also delete a pay item using the standard *MicroStation* tool Delete. Once a pay item is deleted, it must be recreated using the Create Pay Items dialog box.

## Modifying Pay Item Graphics

You can move the pay item capsule graphics using the standard *MicroStation* tool of Move Element. You can modify the leader lines using the standard *MicroStation* tools of Modify Element, Insert Vertex and Delete Vertex. Remember, **DO NOT** use *MicroStation*'s Undo or Redo commands with *API*.

# WORKING WITH BID ITEMS

## Adding a Bid Item to the Master List

If you need to add a special provision bid item to your current project, click the "Special Provisions" Menu item at the upper left corner of the Create Pay Item dialog box (Figure 14).

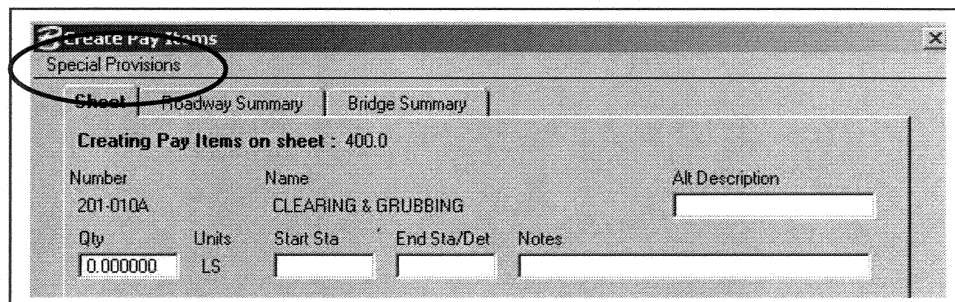


Figure 14. Use this menu item to add a special provision bid item to a project.

This will bring up the Special Provision dialog box (Figure 15). You must enter a value in each field of this dialog box. Click "OK" when you are finished. When a special provision is added to the master bid item list, it remains in the Master Bid Item list and can be used throughout the entire project, in all of the design files.

Remember, you must have prior approval before adding a new bid item to the Master Bid Item list in your project. You are working with a copy of the ITD Master Bid Item list, so any additions must be added to the ITD Master Bid Item list used by Roadway Design for Estimator and Trans\*Port.

Figure 15. Create Special Provision dialog box

## Modifying the Description of a Bid Item in the Master Bid Item List

You can modify the description of a bid item using the "Alt Description" text box on the Create Pay Items dialog box (Figure 16). This will be the alternate description that appears in Estimator and Trans\*Port. The function will append pay item information to the end of the pay item description field. The alternate description will be shown in the master bid item list and on the sidebar summary for all pay items of that type, including those placed before you added the alternate description.

You cannot edit any other information in a bid item, nor can you delete a bid item from the master bid item list. If you need to change a bid item, use the Special Provisions function above to add a new bid item.

Number	Name	Qty	Units	Start Sta	End Sta/Det	Notes	Alt Description
201-010A	CLEARING & GRUBBING	0.000000	LS				

Figure 16. Create Pay Items - Alternate Description field.

## MANAGING SHEETS

APT's "Sheet Attribute" function allows you to manage the individual sheets within a project (Figure 17).

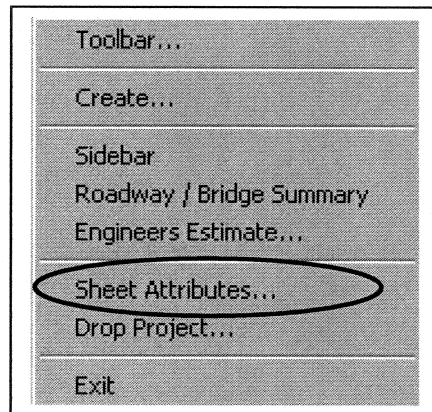


Figure 17. Sheet Attribute menu item

When you select this item, the Sheet Attributes dialog box displays (Figure 18). On this screen, you can insert a sheet, change the scale of a sheet, modify the beginning and ending stations of a sheet, renumber a sheet or range of sheets, and delete a sheet.

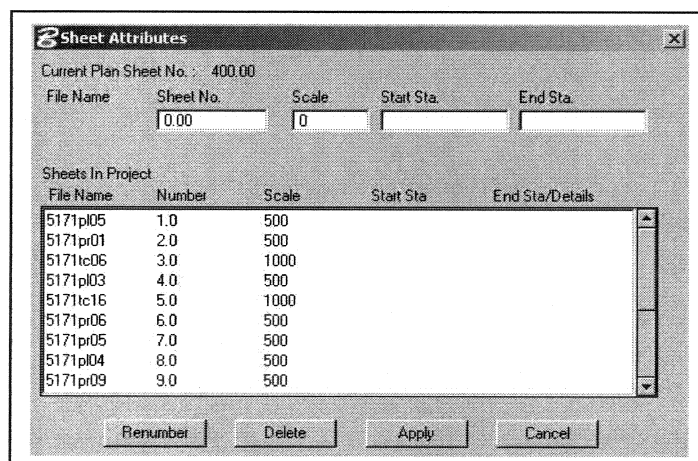


Figure 18. Sheet Attributes dialog box

## Modifying Beginning and Ending Stations

To modify a station, select the sheet, enter the new station number in the entry boxes, and click the "Apply" button.

## Renumbering a Range of Sheets

### Key Points for Renumbering Sheet Ranges

- When renumbering a range of sheets, the new range *must* be the same size as the old range.
- If your new range includes any existing sheet numbers, *API* will not allow you to renumber until you renumber those sheets (unless they are being renumbered in this process).

To renumber a range of sheets, select the range and click "Renumber." The Renumber Sheets dialog box will open (Figure 19). Enter the new beginning and ending sheet numbers and click "OK."

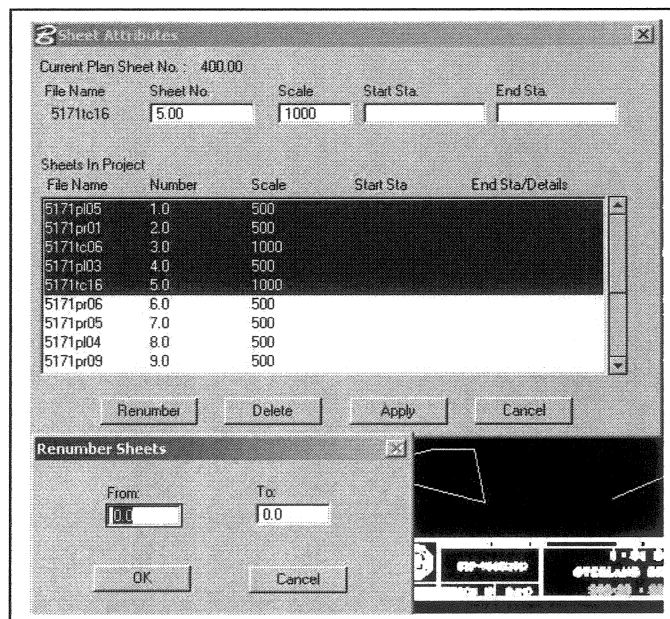


Figure 19. Renumber Sheets Dialog box.

## Inserting a Sheet

### *Insert a Sheet With Renumbering*

To insert a plan sheet, first renumber the existing sheets to make room for the new one. (See renumber a range of sheets above.)

If, for example, you want to insert a new sheet between sheets 5 and 6 of 10, select sheets 6-10 in the Sheet Attributes dialog box and renumber them 7 to 11.

Once you've renumbered the existing sheets, create or open the plan sheet you are inserting. Enter the new sheet number in the Sheet Number dialog box that automatically opens (Figure 20). In this example, you would enter sheet number 6.

Then begin creating pay items for the new sheet, as outlined in the section, "Working With Pay Items."

Remember, **DO NOT** copy any *MicroStation* file that has already had pay items or a sheet number assigned to it. Create a new file instead.

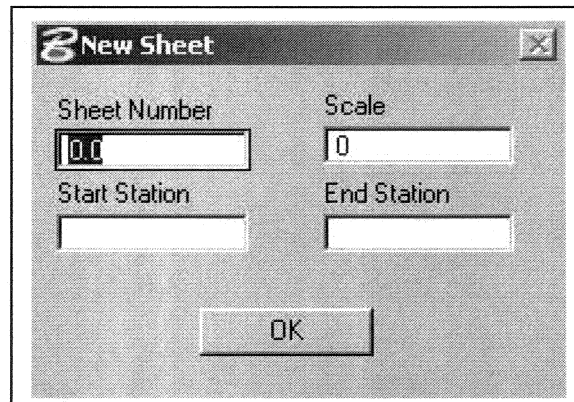


Figure 20. New Sheet dialog box

### *Insert a Sheet Without Renumbering*

You may want to insert a sheet into a design without renumbering all of the other sheets. This should only be done when you need a new plan sheet containing pay items, but the final plan sheets have already been plotted and it is not practical to renumber and replot all plan sheets.

In this case, create or open the new *MicroStation* file. When the Sheet Number dialog box asks you for a page number, enter the new sheet number with a decimal point, i.e. 6.1 for a sheet that will fall between sheets 6 and 7.

Remember, the Roadway Summary must still be recreated and replotted with the added plan sheet pay items.

### Deleting a Sheet

To delete a sheet, go to the Sheet Attributes screen, select the sheet, and click the “Delete” button. This will call up a dialog box that allows you to confirm the deletion (Figure 21).

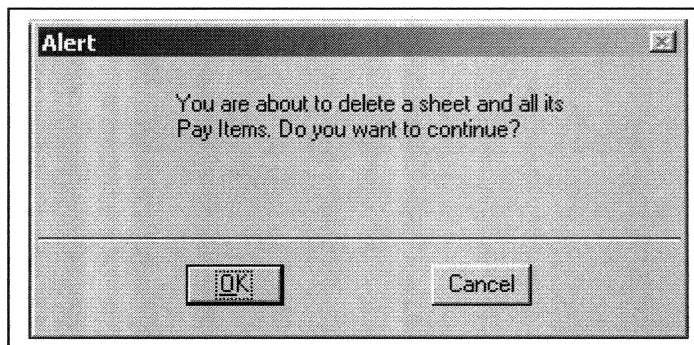


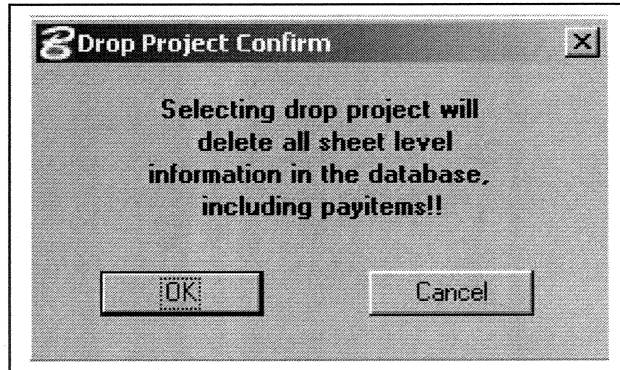
Figure 21. Delete a Sheet warning dialog box

Deleting a sheet does **NOT** delete the *MicroStation* design file.  
It simply removes the sheet from API.

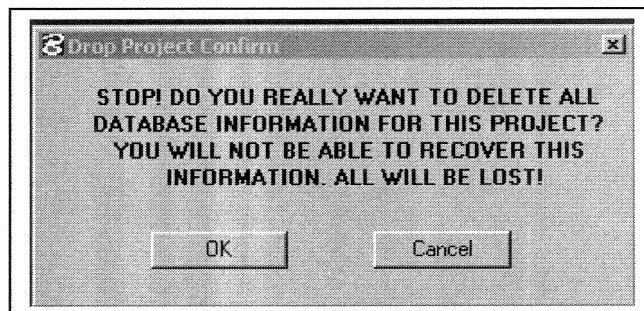


## DROPPING A PROJECT

To drop an entire project, click “Drop Project” on the main *API* menu bar. You will be given two opportunities to change your mind, before all pay item and sheet information for that project is deleted from the database (Figures 22, 23).



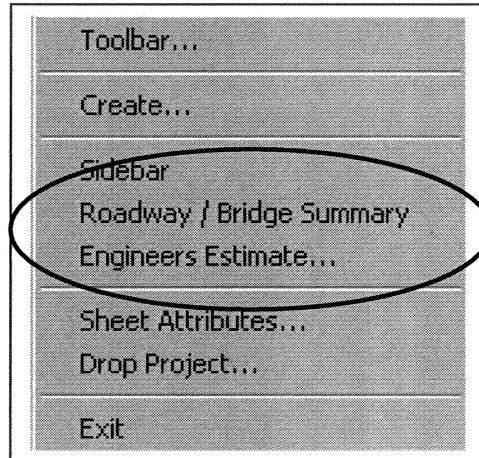
*Figure 22. First Drop Project warning dialog box.*



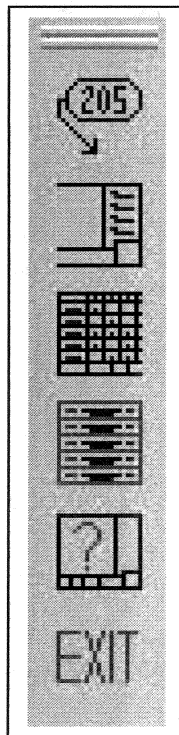
*Figure 23. Second and final Drop Project warning dialog box.*

## CREATING SUMMARIES

Sidebar Summaries, Roadway Summaries, and the Engineer's Estimate are all created from either the *API* drop down menu (Figure 24) or the Dockable Toolbar (Figure 25).



**Figure 24. Main API Menu.**



**Figure 25. Dockable toolbar.**

## Creating a Sidebar Summary

Once all of the pay items have been entered for a design sheet, you are ready to generate the sidebar summary. This will display directly on the design file. Create a sidebar summary by selecting "Sidebar" from the *API* drop down menu or the dockable toolbar.

The *MicroStation* message prompt will display "Identify Upper Left Placement Point of the Sidebar." Click the mouse on the upper left hand corner of the sidebar. The summary will be displayed as a single, non-editable graphic.

## Deleting a Sidebar Summary

A sidebar summary can be deleted with the *MicroStation* editing tools. Unlike the capsules, this is a graphic element and has no relationship to the database after it is created. The sidebar summary cannot be edited. If you want to make changes, you must go back, edit the pay items and redisplay the summary.

If the sidebar summary is long and will not fit within the fixed sidebar area, it will wrap to the left, staying inside the plan sheet.

## Creating a Roadway or Bridge Summary

Before you use *API* to prepare a Roadway or Bridge Summary, you'll need to copy the *xxxxrsum.dgn* and *xxxxbsum.dgn* files to your project's directory, and rename them with the project key number.

Open either the Roadway Summary file or the Bridge Summary file. If you have previously placed a summary on this sheet, you will need to delete those graphics before creating a new summary. Add project borders and grids as needed.

Select "Roadway/Bridge Summary" from the *API* drop down menu or the dockable toolbar. The appropriate summary data will be filled in on the summary sheet that you have open (this may take a minute or two.)

### Notes About Placement of Graphics on Summaries

The placement of pay item information on the roadway summaries is predetermined by ITD. The graphics for the summaries and associated borders, either in graphics or reference files, may not be altered in any way (moving, scaling, etc.). Active points have been provided to show the location of each additional sheet, if needed. The active points correspond to the upper left-hand corner of the plan sheet border.

## Creating an Engineer's Estimate

Engineer's Estimates are stored in text files named <project key number>.csv. To create an Engineer's Estimate for your current project, select "Engineer's Estimate" from the *API* drop down menu or the dockable toolbar. *API* will prompt you for a save location and filename of the new estimate file you are creating (Figure 26). Once you have chosen a name and location, click the "OK" button to create the new estimate file.

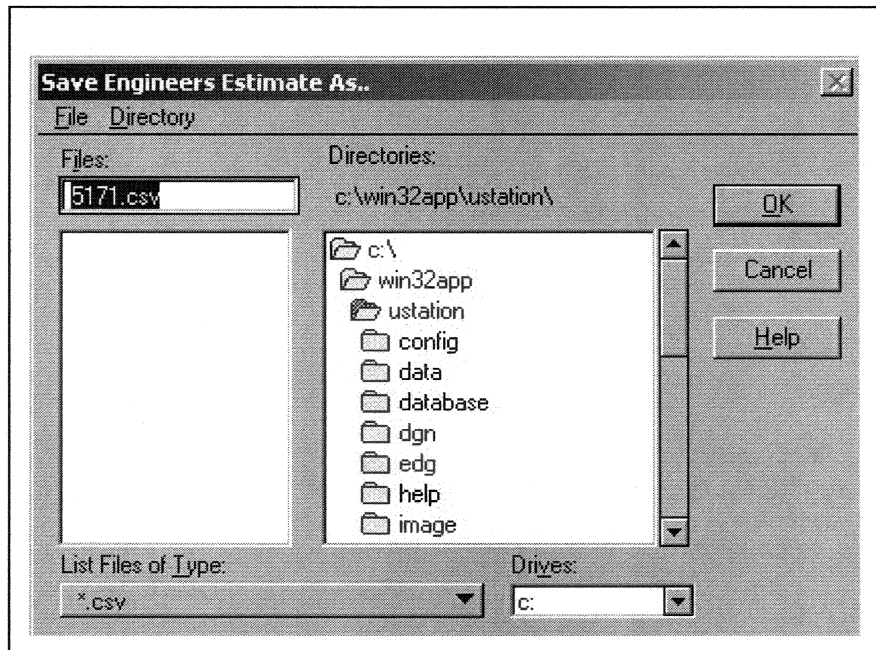


Figure 26. Select the save location and filename of Engineer's Estimate.

### Notes on Summaries

Once bid items have been created, summaries can be created at any time. However, ALL pay items and edits must be completed prior to the final creation of the summaries and estimate, and prior to final plotting of the project plan sheets.

If a bid item in the Master Bid Item list is edited, then all the sidebar summaries containing that pay item, the Roadway Summary, and the Estimate must be recreated.

If a pay item is added, deleted, modified or edited, the sheet-specific Sidebar Summary, the Roadway Summary, and the Estimate will all need to be recreated.

## TECHNICAL SUPPORT

If you need technical assistance with any aspect of this program, contact:

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208/841-3901

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